

all birds; for the first bird must have been brother or cousin to some other animal that was not a bird, since there are other animals besides birds in this world, to no one of which any bird bears as close a relation as it bears to its own class. The same argument applies to every other class; and as to the facts, they are fatal to such an assumption, for geology teaches us that among the oldest inhabitants of our globe known, there are representatives of nine distinct classes of animals, which by no possibility can be descendants of one another, since they are contemporaries.

The same line of argument and the same class of facts forbid the assumption that either the representatives of one and the same order, or those of one of the same family, or those of one of the same genus, should be considered as lineal descendants of a common stock; for orders, families, and genera are based upon different categories of characters, and not upon more or less extensive characters of the same kind, as I have shown years ago (vol. i. pp. 150-163), and numbers of different kinds of representatives of these various groups make their appearance simultaneously in all the successive geological periods. There appear together Corals and Echinoderms of different families and of different genera in each successive geological formation; and this is equally true for Bryozoa, Brachiopods, and Lamelli-branchiata, for Trilobites and the other Crustacea, in fact for the representatives of all the classes of the animal kingdom, making due allowance for the period of the first appearance of each; and at all times and in all classes the representatives of these different kinds of groups are found to present the same definiteness in their characteristics and limitation. Were the transmutation theory true, the geological record should exhibit an uninterrupted succession of types blending gradually into one another. The fact is, that throughout all geological times each period is characterized by definite specific types, belonging to definite genera, and these to definite families, referable to definite orders, constituting definite classes and definite branches, built upon definite plans. Until, therefore, the facts of Nature are shown to have been mistaken by those who have collected them, and to have a different meaning from that now generally assigned to them, I shall consider the transmutation theory as a scientific mistake, untrue in its facts, unscientific in its method, and mischievous in its tendency. — *Silliman's American Journal* for July 1860.

*Note on the Fox of Japan.* By ARTHUR ADAMS, F.L.S.

The Fox of Japan is quite a distinct species from that of China, specimens of which I procured on the banks of the Wusung River, near its junction with the Yang-tze-kiang. The Japanese species, four skins of which were obtained by Mr. Bedwell from Niigata in Nippon, has black ears lined with white, and a black spot on the upper surface near the base of the tail. The fur on the neck and back is ferruginous, and is much softer and longer than that of the Foxes of Europe and China; and the brush is also longer and thicker. — *Proc. Zool. Soc.* March 27, 1860.